

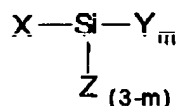
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In the Claims

Claim 1 (Original): A medical device formed of moisture curable materials, comprising: a dilatation balloon formed from a crosslinked polymeric material, the crosslinked polymeric material comprising the reaction product of:

- I) at least one polymer; and
- II) at least one hydrolyzable silane having the following general structure:



where X is a monovalent non-hydrolyzable organic moiety comprising at least one functional group W which is reactive with said polymer with the proviso that an Si-C bond is present between Si and W, Y is a hydrolyzable group, Z is a monovalent hydrocarbon group, and m is an integer from 1 to 3;

said reaction product having been further reacted with moisture to produce a polymeric material crosslinked through --Si--O--Si-- linkages.

Claim 2 (Original): The device of Claim 1 wherein Y is an alkoxy group having from 1 to 4 carbon atoms.

Claim 3 (Original): The device of Claim 1 wherein W is selected from (meth)acrylamido, (meth)acryloxy, carboxyl, epoxy, amino, ureido, isocyanato, thiocyanato, mercapto, styryl, vinyl, allyl, haloalkyl, acid anhydride, sulfonyl azide, carboxylic acid esters of aromatic alcohols, and mixtures thereof.

Claim 4 (Original): The device of Claim 1 wherein X is selected from epoxycyclohexyl, glycidoxypentyl, isocyanatopentyl, vinyl, and allyl.

Claim 5 (Original): The device of Claim 1 wherein said at least one hydrolyzable silane comprises an organofunctional group capable of readily reacting with a primary or secondary amine and said at least one polymer is an amino functional polymer.

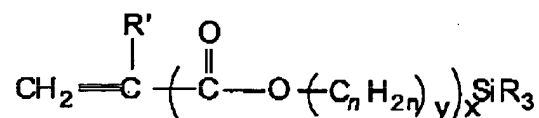
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Claim 6 (Original): The catheter device of Claim 1 wherein said hydrolyzable silane is selected from isocyanatoalkylalkoxysilanes, glycidoxyalkylalkoxysilanes and epoxycyclohexylalkylalkoxysilanes.

Claim 7 (Original): The device of Claim 6 wherein said hydrolyzable silane is selected from isocyanatopropyltriethoxysilane, glycidoxypropyltrimethoxysilane and 2-(3,4-epoxycyclohexyl)ethyltrimethoxysilane.

Claim 8 (Original): The device of Claim 1 wherein at least one hydrolyzable silane has the following general structure:



where R' is a hydrogen atom or lower C₁ to C₄ alkyl; x and y are 0 or 1 with the proviso that when x is 1, y is 1; n is an integer from 1 to 12 inclusive, preferably 1 to 4, and each R independently is a hydrolyzable organic group such as an alkoxy group having from 1 to 12 carbon atoms, aryloxy group, aralkoxy group, aliphatic acyloxy group having from 1 to 12 carbon atoms, amino or substituted amino groups, or a lower alkyl group having 1 to 6 carbon atoms inclusive, with the proviso that not more than one of the three R groups is an alkyl.

Claim 9 (Original): The device of Claim 8 wherein said reaction proceeds by a free radical mechanism.

Claim 10 (Original): The device of Claim 9 wherein said free radical initiator is an organic peroxide.

Claim 11 (Original): The device of Claim 8 wherein said hydrolyzable silane is selected from vinyltrimethoxysilane, vinyltriethoxysilane, allyltrimethoxysilane, γ-(meth)acryloxypropyltrimethoxysilane, and mixtures thereof.

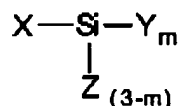
Claim 12 (Original): A balloon catheter comprising a balloon wherein said balloon comprises a moisture cured polymeric material which is crosslinked through --Si--O--Si-- linkages.

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Claim 13 (Original): The balloon catheter of Claim 12 wherein said moisture cured polymeric material is the reaction product of:

- a) at least one polymer; and
- b) at least one hydrolyzable silane having the following general structure:



where X is a monovalent non-hydrolyzable organic moiety comprising at least one functional group W which is reactive with said polymer with the proviso that an Si-C bond is present between Si and W, Y is a hydrolyzable group, Z is a monovalent hydrocarbon group, and m is an integer from 1 to 3.

Claim 14 (Original): The balloon catheter of Claim 13 wherein said at least one hydrolyzable silane has an organofunctional group capable of readily reacting with a primary or secondary amine and said at least one polymer is amino functional.

Claim 15 (Original): The catheter balloon of Claim 13 wherein Y is an alkoxy of C₁ to C₄.

Claim 16 (Original): The catheter balloon of Claim 13 wherein W is selected from (meth)acrylamido, (meth)acryloxy, carboxyl, epoxy, amino, ureido, isocyanato, thiocyanato, mercapto, styryl, vinyl, allyl, haloalkyl, acid anhydride, sulfonyl azide, carboxylic acid esters of aromatic alcohols, and mixtures thereof.

Claim 17 (Original): The catheter balloon of Claim 13 wherein X is selected from epoxycyclohexyl, glycidoxypentyl, isocyanatopentyl, vinyl, and allyl.

Claim 18 (Original): The catheter balloon of Claim 13 wherein said hydrolyzable silane is selected from isocyanatopentyltriethoxysilane, glycidoxypentyltrimethoxysilane and 2-(3,4-epoxycyclohexyl)ethyltrimethoxysilane.

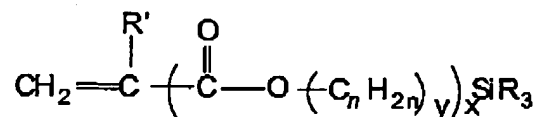
Claim 19 (Original): The catheter balloon of Claim 12 wherein said moisture cured polymeric material is the reaction product of:

- a) at least one polymer; and

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- b) at least one hydrolyzable silane having the following general structure:



where R' is a hydrogen atom or lower C₁ to C₄ alkyl; x and y are 0 or 1 with the proviso that when x is 1, y is 1; n is an integer from 1 to 12 inclusive, preferably 1 to 4, and each R independently is a hydrolyzable organic group such as an alkoxy group having from 1 to 12 carbon atoms (e.g. methoxy, ethoxy, butoxy), aryloxy group (e.g. phenoxy), araloxy group (e.g. benzyloxy), aliphatic acyloxy group having from 1 to 12 carbon atoms (e.g. formyloxy, acetyloxy, propanoyloxy), amino or substituted amino groups (alkylamino, arylamino), or a lower alkyl group having 1 to 6 carbon atoms inclusive, with the proviso that not more than one of the three R groups is an alkyl.

Claim 20 (Original): A method of forming a catheter balloon comprising the steps of:

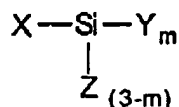
- a) providing at least one polymeric material at or above its melt temperature;
- b) providing at least one organofunctional hydrolyzable silane compound;
- c) extruding a) and b) into a tubular preform at a temperature wherein a) and b) react;
- d) forming said tubular preform into a balloon preform;
- e) blowing said balloon preform into a balloon; and
- f) exposing said balloon or balloon preform to water;

wherein said a) and b) react to form a polymeric material having hydrolyzable groups on said silane wherein said hydrolyzable groups crosslink upon exposure to water and form --Si--O--Si-- linkages.

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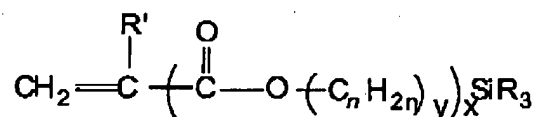
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Claim 21 (Original): The method of Claim 20 wherein said at least one organofunctional hydrolyzable silane has the following general structure:



where X is a monovalent non-hydrolyzable organic moiety comprising at least one functional group W which is reactive with said polymeric material with the proviso that a Si-C bond is present between Si and W; Y is a hydrolyzable group, Z is a monovalent hydrocarbon group, and m is an integer from 1 to 3.

Claim 22 (Original): The method of Claim 20 wherein said at least one hydrolyzable silane has the following general structure:



where R' is a hydrogen atom or lower C₁ to C₄ alkyl; x and y are 0 or 1 with the proviso that when x is 1, y is 1; n is an integer from 1 to 12 inclusive, preferably 1 to 4, and each R independently is a hydrolyzable organic group such as an alkoxy group having from 1 to 12 carbon atoms, aryloxy group, araloxy group, aliphatic acyloxy group having from 1 to 12 carbon atoms, amino or substituted amino groups, or a lower alkyl group having 1 to 6 carbon atoms inclusive, with the proviso that not more than one of the three R groups is an alkyl.

Claim 23 (Original): The method of Claim 22 wherein said hydrolyzable silane is selected from vinyltrimethoxysilane, vinyltriethoxysilane, allyltrimethoxysilane, and γ -(meth)acryloxypropyltrimethoxysilane.

Claim 24 (Original): The method of Claim 21 wherein W is selected from (meth)acrylamido, (meth)acryloxy, carboxyl, epoxy, amino, ureido, isocyanato, thiocyanato, mercapto, styryl, vinyl, allyl, haloalkyl, acid anhydride, sulfonyl azide, carboxylic acid esters of aromatic alcohols, and mixtures thereof.

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Claim 25 (Original): The method of Claim 21 wherein X is selected from epoxycyclohexyl, glycidoxypopyl, isocyanatopopyl, vinyl, and allyl.

Claim 26 (Original): The method of Claim 21 wherein Y is alkoxy of C₁ to C₄.

Claim 27 (Original): The method of Claim 21 wherein said hydrolyzable silane is selected from isocyanatopopyltriethoxysilane, glycidoxypopyltrimethoxysilane and 2-(3,4-epoxycyclohexyl)ethyltrimethoxysilane.

Claim 28 (Original): The method of Claim 20 wherein said polymeric material is amino functional.

Claim 29 (Original): The method of Claim 20 wherein said exposure to water is accomplished in a water bath.

Claim 30 (Original): The method of Claim 20 wherein in during said blowing step, said balloon is further axially stretched.

Claim 31 (New): The medical device of claim 1 wherein said at least one polymer is selected from the group consisting of polyolefins, acrylic polymers, poly(meth)acrylates, polyurethanes, polyesters, polyamides, polysulfones, polyvinyls and copolymers thereof.

Claim 32 (New): The medical device of claim 31 wherein said at least one polymer is a polyethylene, polypropylene or copolymers thereof, copolymers of ethylene and at least one α -olefin and propylene α -olefins

Claim 33 (New): The medical device of claim 1 wherein said crosslinked polymeric material is the reaction product of at least one amino functional polymer and at least one isocyanate functional hydrolyzable silane.

Claim 34 (New): The medical device of claim 1 wherein said crosslinked polymeric material is the reaction product of at least one poly(meth)acrylate polymer having pendant hydroxy groups and at least one isocyanato functional alkoxysilane.